

## SEQUENCE LISTING

<110> Probiogen AG

<120> Immortalized Avian Cell Lines for Virus Production

<130> 042666wo/JH/PCH

<140>

<141>

<150> 03025158.1

<151> 2003-11-03

<160> 19

<170> PatentIn Ver. 2.1

<210> 1

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS182

<400> 1

actcgagctg acgtgtagtg tatt

24

<210> 2

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS183

<400> 2

cacacgcaat cacagggtt

18

<210> 3

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS184

<400> 3

actcgagtca tggaggcttg ggagt

25

<210> 4

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer VS185

<400> 4

acacatttca gtacctca

18

&lt;210&gt; 5

&lt;211&gt; 25

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Primer  
VintSA-F

&lt;400&gt; 5

aaggtaccct ccctagtcctc agtga

25

&lt;210&gt; 6

&lt;211&gt; 25

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Primer Vint  
SA-R

&lt;400&gt; 6

caatgtacag agtgggctcc tgtgg

25

&lt;210&gt; 7

&lt;211&gt; 6471

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Plasmid  
pEFAd5E1A

&lt;400&gt; 7

gtaccgaatt	caagcttcgt	gaggctccgg	tgcccgtcag	tgggcagagc	gcacatcgcc	60
cacagtcccc	gagaagttgg	ggggaggggt	cggcaattga	accggtgcct	agagaagggtg	120
gcgcggggta	aactgggaaa	gtgatgtcgt	gtactggctc	cgcctttttc	ccgaggggtgg	180
gggagaaccg	tatataagtg	cagtagtcgc	cgtgaacgtt	ctttttcgca	acgggtttgc	240
cgccagaaca	caggtaaagt	ccgtgtgtgg	ttcccgcggg	cctggcctct	ttacgggtta	300
tggcccttgc	gtgccttgaa	ttacttccac	ctggctccag	tacgtgatc	ttgatcccca	360
gctggagcca	ggggcgggcc	ttgcgcttta	ggagcccctt	cgcctcgtgc	ttgagttgag	420
gcctggcctg	ggcgctgggg	ccgcgcgctg	cgaatctggt	ggcaccttcg	cgctgtctc	480
gctgctttcg	ataagtctct	agccatttaa	aatttttgat	gacctgctgc	gacgcttttt	540
ttctggcaag	atagtcttgt	aaatgcgggc	caggatctgc	acactggtat	ttcggttttt	600
gggcccgcgg	ccggcgacgg	ggcccgtgcg	tcccagcgca	catgttcggc	gaggcggggc	660
ctgcgagcgc	ggccaccgag	aatcggaagg	gggtagctct	aagctggccg	gcctgctctg	720
gtgcctggcc	tcgcgcggcc	gtgtatcgcc	ccgccttggt	cggcaaggct	ggcccggctc	780
gcaccagttg	cgtgagcgga	aagatggccg	cttcccggcc	ctgctccagg	gggctcaaaa	840
tggaggacgc	ggcgctcggt	agagcgggcg	ggtgagtcac	ccacacaaag	gaaaagggcc	900
tttccgtcct	cagccgtcgc	ttcatgtgac	tccacggagt	accgggcgcc	gtccaggcac	960
ctcgattagt	tctggagctt	ttggagtacg	tcgctctttg	gttgggggga	ggggttttat	1020
gcgatggagt	ttccccacac	tgagtgggtg	gagactgaag	ttaggccagc	ttggcacttg	1080
atgtaattct	ccttgggaatt	tggccttttt	gagtttggat	cttggttcat	tctcaagcct	1140
cagacagtgg	ttcaaagttt	ttttcttcca	tttcagggtg	cgtgaacact	cgagctgacg	1200
tgtagtgat	ttatacccgg	tgagttcctc	aagaggccac	tcttgagtgc	cagcgagtag	1260
agttttctcc	tccgagccgc	tccgacaccg	ggactgaaaa	tgagacatat	tatctgccac	1320
ggaggtgtta	ttaccgaaga	aatggccgcc	agtcttttgg	accagctgat	cgaagaggta	1380
ctggctgata	atcttccacc	tcctagccat	tttgaaccac	ctacccttca	cgaactgtat	1440

gatttagacg tgacggcccc cgaagatccc aacgaggagg cggtttcgca gattttttccc 1500  
gactctgtaa tgttggcggt gcaggaaggg attgacttac tcacttttcc gccggcgccc 1560  
ggttctccgg agccgcctca cctttcccgg cagcccgagc agccggagca gagagccttg 1620  
ggtccggttt ctatgccaaa ccttgtaccg gaggtgatcg atcttacctg ccacgaggct 1680  
ggctttccac ccagtgcgca cgaggatgaa gagggtgagg agtttgtgtt agattatgtg 1740  
gagcaccocg ggcacgggtg caggtcttgt cattatcacc ggaggaatac gggggaccca 1800  
gatattatgt gttcgctttg ctatatgagg acctgtggca tgtttgtcta cagtaagtga 1860  
aaattatggg cagtgggtga tagagtgggt ggtttgggtt ggtaattttt tttttaattt 1920  
ttacagtttt gtggttttaa gaattttgta ttgtgatttt tttaaaaggt cctgtgtctg 1980  
aacctgagcc tgagcccgag ccagaaccgg agcctgcaag acctaccgcg cgtcctaaaa 2040  
tgggcgctgc taccctgaga cgcgccacat cacctgtgtc tagagaatgc aatagtagta 2100  
cggatagctg tgactccggt ccttctaaca cacctcctga gatacaccgc gtggtcccgc 2160  
tgtgccccat taaaccagtt gccgtgagag ttggtggggc tcgccaggct gtggaatgta 2220  
tcgaggactt gcttaacgag cctgggcaac ctttggactt gagctgtaaa cgcgccaggc 2280  
cataaggtgt aaacctgtga ttgctgtggg aattctagaa gctcgctgat cagcctcgac 2340  
tgtgccttct agttgccagc catctgttgt ttgccccctc cccgtgcctt ccttgaccct 2400  
ggaaggtgcc actcccactg tcctttccta ataaaatgag gaaattgcat cgcattgtct 2460  
gagtaggtgt cattctattc tgggggggtg ggtggggcag gacagcaagg gggaggattg 2520  
ggaagacaat agcaggcatg ctggggatgg cccgggctct atggcttctg aggcggaaag 2580  
aaccagctgg ggctctaggg ggtatcccca cgcgcctgt agcggcgcat taagcgcggc 2640  
gggtgtgggt gttacgcgca gcgtgaccgc tacacttgcc agcgcctag cgcgccctcc 2700  
tttcgctttc ttcccttcc tctcgcacac gttcgcggc tttccccgtc aagctctaaa 2760  
tcggggcatc cctttagggt tccgatttag tgctttacgg cacctcgacc ccaaaaaact 2820  
tgattagggt gatggttcac gtagtgggoc atcgccctga tagacggttt ttgcgccctt 2880  
gacgttgag tccacgttct ttaatagtgg actctgttc caaactggaa caacactcaa 2940  
ccctatctcg gtctattctt ttgatttata agggattttg gggatttcgg cctattgggt 3000  
aaaaaatgag ctgatttaac aaaaatttaa cgcgaattaa ttctgtggaa tgtgtgtcag 3060  
ttaggtgtg gaaagtcccc aggtcccca ggcaggcaga agtatgcaaa gcatgcatct 3120  
caattagtca gcaaccaggt gtggaaagtc cccaggctcc ccagcaggca gaagtatgca 3180  
aagcatgcat ctcaattagt cagcaaccat agtcccgcct ctaactccgc ccatcccgc 3240  
cctaactccg cccagttccg cccattctcc gccctaggc tgactaattt tttttattta 3300  
tgacagaggc gagggccgct ctgcctctga gctattccag aagtagtgag gaggctttt 3360  
tgaggcccta ggcttttgca aaaagctccc gggagggtcca caatgattga acaagatgga 3420  
ttgcacgcag gttctccggc cgcttgggtg gagaggctat tcggctatga ctgggcacaa 3480  
cagacaatcg gctgctctga tgccgcctgt ttccggctgt cagcgcaggg gcgcccgggt 3540  
ctttttgtca agaccgacct gtccggtgcc ctgaatgaac tccaggacga ggcagcgcg 3600  
ctatcgtagc tggccacgac gggcgcttcc tgccgagctg tgctcgacgt tgtcactgaa 3660  
gcggaaggg actggctgct attggcgcaa gtgcccgggc aggatctcct gtcactcac 3720  
cttgctcctg ccgagaaagt atccatcatg gctgatgcaa tgccggcggt gcatacgctt 3780  
gatccggcta cctgcccatt cgaccacca gcgaacatc gcacgagcg agcacgtact 3840  
cggatggaag ccggtcttgt cgatcaggat gatctggacg aagagcatca ggggctcgcg 3900  
ccagccgaac tgttcgccag gctcaaggcg cgtatgcccg acggcgagga tctcgtcgtg 3960  
actcatggcg atgcctgctt gccgaatata atgggtgaaa atggccgctt ttctggattc 4020  
atcgactgtg gccggctggg tgtggcgga cgtatcagg acatagcgtt ggctaccgct 4080  
gatattgctg aagagcttgg cggcgaatgg gctgaccgct tctcgtgct ttacggtatc 4140  
gccgctcccg attcgcagcg catcgcttcc tatcgcttcc ttgacgagtt cttctgagcg 4200  
ggactctggg gttcgaaatg accgaccaag cgacgcccc cctgccaatca cgagatttcg 4260  
attccaccgc cgccttctat gaaagggttg gcttcggaat cgttttccgg gacgcccgt 4320  
ggatgacct ccagcgcggg gatctcatgc tggagttctt cgcaccccc aacttgttta 4380  
ttgcagctta taatggttac aaataaagca atagcatcac aaatttcaca aataaagcat 4440  
ttttttcact gcattctagt tgtggtttgt ccaaactcat caatgtatct tatcatgtct 4500  
gtataccgga tctttccgct tctcgtccta ctgactcgt gcgctcggtc gttcggctgc 4560  
ggcgagcggt atcagctcac tcaaaggcgg taatacgggt atccacagaa tcaggggata 4620  
acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg 4680  
cgttgcctgg gtttttccat aggtccgcgc cccctgacga gcatcacaaa aatcgacgct 4740  
caagtacagag gtggcgaaac ccgacaggac tataaagata ccaggcggtt cccctggaa 4800  
gctccctcgt gcgctctcct gttccgaccc tgccgcttac cggataacct tccgccttcc 4860  
tcccttcggg aagcgtggcg ctttctcaat gctcacgctg taggtatctc agttcggtgt 4920  
aggctcgttcg ctccaagctg ggctgtgtgc acgaacccc cgttcagccc gaccgctgcg 4980  
ccttatccgg taactatcgt cttgagtcga acccggttaag acacgactta tcgcccactg 5040  
cagcagccac tggtaacagg attagcagag cgaggtatgt aggcggtgct acagagttct 5100  
tgaagtgggt gcctaactac ggctacacta gaaggacagt atttggtatc tgcgctctgc 5160  
tgaagccagt taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg 5220

```

ctggtagcgg tgggtttttt gtttgcaagc agcagattac ggcagaaaa aaaggatctc 5280
aagaagatcc tttgatcttt tctacggggt ctgacgctca gtggaacgaa aactcacgtt 5340
aagggtatctt ggtcatgaga ttatcaaaaa ggatcttcac ctagatcctt ttaaattaaa 5400
aatgaagttt taaatcaatc taaagtatat atgagtaaac ttggtctgac agttaccaat 5460
gcttaatcag tgaggcacct atctcagcga tctgtctatt tctgtcatcc atagtgcct 5520
gactccccgt cgtgtagata actacgatac gggagggtct accatctggc cccagtgtg 5580
caatgatacc gcgagacca cgctcaccgg ctccagattt atcagcaata aaccagccag 5640
ccggaagggc cgagcgcaga agtggctctg caactttatc cgcctccatc cagtctatta 5700
attgttgccg ggaagctaga gtaagtagtt cgccagttaa tagtttgccg aacgttggtg 5760
ccattgctac aggcacgtg gtgtcacgct cgtcgtttgg tatggcttca ttcagctccg 5820
gttcccaacg atcaaggcga gttacatgat ccccatgtt gtgcaaaaa gcggttagct 5880
ccttcgggtc tccgatcgtt gtcagaagta agtggccgc agtggtatca ctcatggtta 5940
tggcagcaact gcataattct cttactgtca tgccatccgt aagatgcttt tctgtgactg 6000
gtgagtactc aaccaagtca ttctgagaat agtgtatgcg gcgaccgagt tgctcttgcc 6060
cggcgtcaat acgggataat accgcgccac atagcagaac tttaaagtg ctcatcattg 6120
gaaaacgttc ttcggggcga aaactctcaa ggatcttacc gctgttgaga tccagttcga 6180
tgtaaccac tcgtgcaccc aactgatctt cagcatcttt tactttcacc agcgtttctg 6240
ggtgagcaaa aacaggaagg caaatgccg caaaaaagg aataaggcg acacggaaat 6300
gttgaatact catactcttc ctttttcaat attattgaag catttatcag ggttattgtc 6360
tcatgagcgg atacatattt gaatgtattt agaaaaataa acaaataggg gttccgcgca 6420
catttccccg aaaagtgcc cctgacgtca gatcgacgga tcgggagatc g 6471

```

&lt;210&gt; 8

&lt;211&gt; 6629

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Plasmid  
pEFAd5E1BSA

&lt;400&gt; 8

```

tcttccgctt cctcgtcac tgactcgtg cgctcggctg ttcggctgcg gcgagcggtg 60
tcagctcact caaaggcgg aatacggta tccacagaat caggggataa cgcaggaaag 120
aacatgtgag caaaaggcca gcaaaagccc aggaaccgta aaaaggccgc gttgctggcg 180
tttttccata ggctccgccc cctgacgag catcacaata atcgacgctc aagtcagagg 240
tggcgaaacc cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg 300
cgctctcctg ttccgaccct gccgcttacc ggatacctgt ccgcctttct ccttcggga 360
agcgtggcgc tttctcatag ctacacgtgt aggtatctca gttcgggtgta ggtcgttcgc 420
tccaagctgg gctgtgtgca cgaaccccc gttcagcccg accgctgcgc cttatccggt 480
aactatcgtc ttgagtccaa ccggtaaga cagacttat cgccactggc agcagccact 540
ggtaacagga ttagcagagc gaggtatgta ggcgggtgta cagagttctt gaagtgggtg 600
cctaactacg gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt 660
accttcggaa aaagagttg tagctcttga tccggcaaac aaaccaccgc tggtagcggg 720
gggttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct 780
ttgatctttt ctacggggtc tgacgctcag tggaaacgaa actcacgtta agggattttg 840
gtcatgagat tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt 900
aaatcaatct aaagtatata tgagtaaact tgggtctgaca gttaccaatg cttaatcagt 960
gaggcaccta tctcagcgat ctgtctatct cgttcaccca tagttgcctg actccccgtc 1020
gtgtagataa ctacgatac ggagggtcta ccatctggcc ccagtgtgc aatgataccg 1080
cgagaccac gctcaccggc tccagattta tcagcaataa accagccagc cggaaggggc 1140
gagcgcagaa gtggctcctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg 1200
gaagctagag taagtagttc gccagttaat agtttgcgca acgttggtgc cattgctaca 1260
ggcatcgtgg tgtcacgctc gtcgtttggg atggcttcat tcagctccgg tttccaaacga 1320
tcaaggcgag ttacatgatc ccccatgttg tgcaaaaaag cgggttagctc cttcgggtcct 1380
ccgatcgttg tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg 1440
cataattctc ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca 1500
accaagtcac tctgagaata gtgtatgctg cgaccgagtt gctcttgccc ggcgtcaata 1560
cgggataata ccgcgccaca tagcagaact ttaaagtgc tcatcattgg aaaacgttct 1620
tcggggcgaa aactctcaag gatcttaccg ctggttgagat ccagttcgat gtaaccact 1680
cgtgcacca actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa 1740
acaggaaggc aaaatgccgc aaaaaaggga ataaggcgca cacggaaatg ttgaatactc 1800

```



atactcttcc	tttttcaata	ttattgaagc	atttatcagg	gttattgtct	catgagcggg	1860
tacatatttg	aatgtattta	gaaaaataaa	caaatagggg	ttccgcgcac	atttccccga	1920
aaagtgccac	ctgtatgcgg	tgtgaaatac	cgcacagatg	cgtaaggaga	aaataccgca	1980
tcaggaaatt	gtaagcgta	ataattcaga	agaactcgtc	aagaaggcga	tagaaggcga	2040
tgcgtgcga	atcgggagcg	gcgataccgt	aaagcacgag	gaagcgggtca	gccccattcgc	2100
cgccaagctc	ttcagcaata	tcacgggtag	ccaacgctat	gtcctgatag	cggtccgcca	2160
caccagccg	gccacagtcg	atgaatccag	aaaagcggcc	attttccacc	atgatattcg	2220
gcaagcaggc	atcgccatgg	gtcacgacga	gacccctcgcc	gtcgggcatg	ctcgccttga	2280
gcctggcgaa	cagttcggct	ggcgcgagcc	cctgatgctc	ttcgtccaga	tcacccctgat	2340
cgacaagacc	ggcttccatc	cgagtacgtg	ctcgcctcgat	gcgatgtttc	gcttggtggg	2400
cgaatgggca	ggtagccgga	tcaagcgtat	gcagccgcgg	cattgcatca	gccatgatgg	2460
atactttctc	ggcaggagca	aggtgagatg	acaggagatc	ctgccccggc	acttcgcccc	2520
atagcagcca	gtcccttccc	gcttcagtga	caacgtcgag	cacagctgcg	caaggaaacgc	2580
ccgtcgtggc	cagccacgat	agccgcgctg	cctcgtcttg	cagttcattc	agggcaccgg	2640
acaggtcggg	cttgacaaaa	agaaccgggc	gcccctgcgc	tgacagccgg	aacacggcgg	2700
catcagagca	gccgattgtc	tgttgtgccc	agtcatagcc	gaatagcctc	tccaccaag	2760
cggccggaga	acctgcgtgc	aatccatctt	gttcaatcat	gcgaaacgat	cctcatcctg	2820
tctcttgatc	agagcttgat	cccctgcgcc	atcagatcct	tggcggcgag	aaagccatcc	2880
agtttacttt	gcagggttcc	ccaaccttac	cagagggcgc	cccagctggc	aattccgggt	2940
cgcttgctgt	ccataaaacc	gcccagttca	gctatcgcca	tgtaagccca	ctgcaagcta	3000
cctgctttct	ctttgcgctt	gcgttttccc	ttgtccagat	agcccagtag	ctgacattca	3060
tccgggggtca	gcaccgtttc	tgcggactgg	ctttctacgt	gaaaaggatc	taggtgaaga	3120
tcctttttga	taatctcatg	cctgacattt	atattcccca	gaacatcagg	ttaatggcgt	3180
ttttgatgtc	attttcgcgg	tggctgagat	cagccacttc	ttccccgata	acggagaccg	3240
gcacactggc	catatcggtg	gtcatcatgc	gccagctttc	atccccgata	tgcaccaccg	3300
ggtaaagtcc	acgggagact	ttatctgaca	gcagacgtgc	actggccagg	gggatcacca	3360
tccgtcgccc	cggcgtgtca	ataatatcac	tctgtacatc	cacaaacaga	cgataacggc	3420
tctctctttt	ataggtgtaa	accttaaaact	gccgtacgta	taggctgcgc	aactgttggg	3480
aagggcgatc	ggtgcggggc	tcttcgctat	tacgccagct	ggcgaaaggg	ggatgtgctg	3540
caaggcgatt	aagttgggta	acgccagggt	tttcccagtc	acgacgttgt	aaaacgacgg	3600
ccagtgaatt	gtaatacgac	tcactatagg	gcgaattgaa	tttagcggcc	gcgaattcta	3660
ccgggtaggg	gaggcgcttt	tcccaaggca	gtctggagca	tgcgctttag	cagccccgct	3720
ggcaacttggc	gtacacaag	tggcctctgg	cctcgcacac	attccacatc	caccggtagg	3780
cgccaaccgg	ctccgttctt	tgggtggccc	ttcgcgccac	cttctactcc	tcccctagtc	3840
aggaagtccc	ccccgcgcc	gcagctcgcg	tcgtgcagga	cgtgacaaat	ggaagtagca	3900
cgtctcacta	gtctcgtgca	gatggacagc	accgctgagc	aatggaagcg	ggtaggcctt	3960
tggggcagcg	gccaatagca	gctttgctcc	ttcgttttct	gggctcagag	gctgggaagg	4020
ggtgggtccg	ggggcgggct	caggggcggg	ctcaggggcg	gggcgggcgc	ccgaaggctc	4080
tccggaggcc	cggcattctc	gcacgcttca	aaagcgcacg	tctgccgcgc	tgttctcctc	4140
ttcctcatct	ccgggccttt	ctcagagcatg	gaggcttggg	agtgtttgga	agatttttct	4200
gctgtgcgta	acttgctgga	acagagctct	aacagtacct	cttgggtttt	gaggtttctg	4260
tggggctcat	cccaggcaaa	gttagtctgc	agaattaagg	aggattacaa	gtgggaattt	4320
gaagagcttt	tgaatcctg	tggtagctg	tttgattctt	tgaatctggg	tcaccaggcg	4380
cttttccaag	agaaggatcat	caagactttg	gattttttcca	caccggggcg	cgctgcggct	4440
gctgttgctt	ttttgagttt	tataaaggat	aatggagcg	aagaaaccca	tctgagcggg	4500
gggtacctgc	tggattttct	ggccatgcat	ctgtggagag	cggttgtgag	acacaagaat	4560
cgcctgctac	tgttgtcttc	cgtccgcccc	gcgataatac	cgacggagga	gcagcagcag	4620
cagcaggagg	aagccaggcg	gcggcggcag	gagcagagcc	catggaaccc	gagagccggc	4680
ctggaccctc	gggaatgaat	gttgtacagg	tggctgaact	gtatccagaa	ctgagacgca	4740
ttttgacaat	tacagaggat	gggcaggggc	taaagggggt	aaagagggag	cggggggctt	4800
gtgaggctac	agaggaggct	aggaatctag	cttttagctt	aatgaccaga	caccgtcctg	4860
agtgtattac	ttttcaacag	atcaaggata	attgcgctaa	tgagcttgat	ctgctggcgc	4920
agaagtattc	catagagcag	ctgaccactt	actggctgca	gccaggggat	gattttgagg	4980
aggctattag	ggtatatgca	aaggtggcac	ttaggccaga	ttgcaagtac	aagatcagca	5040
aacttgtaaa	tatcaggaat	tgttgctaca	tttctgggaa	cggggccgag	gtggagatag	5100
atacggagga	taggggtggc	tttagatgta	gcatgataaa	tatgtggccg	ggggtgcttg	5160
gcatggacgg	ggtggttatt	atgaatgtaa	ggtttactgg	ccccaathtt	agcggtagcg	5220
ttttcctggc	caataccaac	cttatccctac	acggtgtaag	cttctatggg	tttaacaata	5280
cctgtgtgga	agcctggacc	gatgtaaggg	ttcggggctg	tgcccttttac	tgctgctgga	5340
aggggggtgg	gtgtcgcccc	aaaagcaggg	cttcaattaa	gaaatgcttc	tttgaaagg	5400
gtaccttggg	tatcctgtct	gagggtaact	ccaggggtcg	ccacaatgtg	gcctccgact	5460
gtgggttgct	catgctagt	aaaagcgtgg	ctgtgattaa	gcataacatg	gtatgtggca	5520
actgcgagga	cagggcctct	cagatgctga	cctgctcgga	cggcaactgt	cacctgctga	5580

```

agaccattca cgtagccagc cactctcgca aggcctggcc agtgtttgag cataacatac 5640
tgaccgcgtg ttccttgcat ttgggtaaca ggaggggggt gttcctacct taccaatgca 5700
atttgagtc cactaagata ttgcttgagc ccgagagcat gtccaagggt aacctgaacg 5760
gggtgtttga catgaccatg aagatctgga aggtgctgag gtacgatgag acccgcacca 5820
ggtgcagacc ctgcgagtgt ggcggtaaac atattaggaa ccagcctgtg atgctggatg 5880
tgaccgagga gctgaggccc gatcacttgg tgctggcctg caccgcgct gagtttggct 5940
ctagcgatga agatacagat tgaggtagt aaatggctag cagtgtaccc tccctagtcc 6000
cagtgatgag aaagagattg agtccagtcc agggagatct catccacttc tgtgttctct 6060
ccacaggagc ccactctgta caagtaaagc ggccgcgact ctagatcata atcagccata 6120
ccacatttgt agaggtttta cttgctttaa aaaacctccc acacctcccc ctgaacctga 6180
aacataaaat gaatgcaatt gttgttgta acttgtttat tgcagcttat aatggttaca 6240
aataaagcaa tagcatcaca aatttcacaa ataaagcatt tttttcactg cattctagtt 6300
gtggtttgtc caaactcatc aatgtatctt aagattaagg gcgaattcgt ttaaacctgc 6360
aggactagtc ccttttagtga ggggttaattc tgagcttggc gtaatcatgg tcatagctgt 6420
ttcctgtgtg aaattgttat ccgctcaciaa ttccacaciaa catacgagcc ggaagcataa 6480
agtgtaaagc ctgggggtgc taatgagtga gctaactcac attaattgcg ttgcgctcac 6540
tgccgcgttt ccagtcggga aacctgtcgt gccagctgca ttaatgaatc ggccaacgcg 6600
cggggagagg cggtttgcgt attgggcgc 6629

```

&lt;210&gt; 9

&lt;211&gt; 8297

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Plasmid 49E

&lt;400&gt; 9

```

agcgcccaat acgcaaaccg cctctccccg cgcgttggcc gattcattaa tgcagctggc 60
acgacagggt tcccgaactg aaagcgggca gtgagcgcaa cgcaattaat gtgagttagc 120
tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa 180
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaaagctca 240
gaattaaccc tactaaagg gactagtcct gcagggttaa acgaattcgc ccttaatctt 300
aagctgccgc ccgacgttg gctgcgagcc ctgggccttc acccgaactt ggggggtggg 360
gtggggaaaa ggaagaaacg cgggcgtatt ggccccaatg gggctctcgtt ggggtatcga 420
cagagtcca gccctgggac cgaacccgc gtttatgaac aaacgacca acaccgtgcg 480
ttttattctg tctttttatt gccgtcatag cgcgggttcc ttccggtatt gtctccttcc 540
gtgttatcct caatctgtat cttcatcgct agagccaaac tcagcgcggg tgcaggccag 600
caccaagtga tcgggcctca gctcctcgtt cacatccagc atcacaggct ggttccctaat 660
atgtttaccg ccacactcgc agggctgca cctgggtgcg gtctcatcgt acctcagcac 720
cttccagatc ttcatggtca tgtcaaacac ccggttcagg ttacacttgg acatgctctc 780
gggctcaagc aatatcttag tgtgactcaa attgcattgg taaggtagga acacccccct 840
cctgttacc aaatgcaagg aacagcgggt cagtatgtta tgcctaaaca ctggccaggc 900
cttgcgagag tggctggcta cgtgaatggt cttcagcagg tgacagttgc cgtccgagca 960
ggtcagcatc tgagaggccc tgtcctcgca gttgccacat accatgttat gcttaatcac 1020
agccacgctt ttcactagca tgaagcaacc acagtcggag gccacattgt ggccgaccct 1080
ggagttacc tcagacagga tacccaagg acacctttca aagaggcatt tcttaattga 1140
agccctgctt ttggggcgac acaccacccc cttccagcag cagtaaaagg cacagccccg 1200
aacccttaca tcgggtccagg cttccacaca ggtattgtta aacctataga agcttacacc 1260
gtgtaggata aggttggtat tggccaggaa aaccgtaccg ctaaaattgg ggccagtaaa 1320
ccttacattc ataataacca cccgtccat gccaaagacc cccggccaca tatttatcat 1380
gctacatcta aaggccaccc tatcctccgt atctatctcc acctcggccc cgttcccaga 1440
aatgtagcaa caattcctga tatttacaag tttgctgatc ttgtacttgc aatctggcct 1500
aagtgccacc tttgcatata ccctaatagc ctctcaaaa tcatccctg gctgcagcca 1560
gtaagtgtc agctgctcta tgggaatact ctgcgccagc agatcaagct cattagcgca 1620
attatccttg atctgttgaa aagtaataca ctcaggacgg tgtctggtca ttaagctaaa 1680
agctagattc ctagcctcct ctgtagcctc acaagcccc cgtcctctct ttacccccct 1740
tagccctgc ccactcctg taattgtcaa aatgcgtctc agttctggat acagttcagc 1800
cacctgtaca acattcattc ccgaggggtc aggcgggtc tcgggttcca tgggctctgc 1860
tctgcgcgc gccgcctggc ttcctcctgc tgetgctgct gctcctcgt cggattatc 1920
gccgggcgga cggaagacaa cagtagcagg cgattcttgt gtctcacaac cgtctccac 1980
agatgcatgg ccagaaaatc cagcaggtag cccccgctca gatgggtttc ttcgctccat 2040

```

ttatccttta taaaactcaa aaaagcaaca gcagccgcag cgcgccccgg tgtggaaaaa 2100  
tccaaagtct tgatgacctt ctcttggaaa agcgctggt gaccagatt caaagaatca 2160  
aacagctcac cacaggattt caaaagctct tcaaattccc acttgtaatc ctctttaatt 2220  
ctgcagacta actttgcctg ggatgagccc cacagaaacc tccaaaacca agaggtactg 2280  
ttagagctct gttccagcaa gttacgcaca gcagaaaaat ctccaaaca ctcccaagcc 2340  
tccatgctcg accggtccct accgacgctg gtcgcgcctc ttataccac gtagaacgca 2400  
gctcagccaa tagaatgagt gccaatatgg aatttccagg ggaaaaccgg ggcggtgta 2460  
cgttttggct gccctttcac ttcccatga cgtgtattgg ctcgagaacg gtactttccc 2520  
attaatcagc tatgggaaag taccgtttaa aggtcacgtt gcattagttt caatagccca 2580  
ttgacgtcaa tgggtggaaa gtacatggcg ttttataaat ggctggaaaa acccaatgac 2640  
tcaccctat tgaccttatg tacgtgccaa taatgggaaa aaccattga ctacccct 2700  
attgaccttt tgtactgggc aaaaccaat ggaaagtcct tattgactca gtgtacttgg 2760  
ctccaatggg actttcctgt tgattacccc ctattgacct tatgtactgg gcaaaacca 2820  
ttggaaagtc cctaataact cagtatatgg cggccgatac ttggcctcgg tggccgatga 2880  
cctcgagggg gggcccggta cccggtggat gtggaatgtg tgcgaggcca gaggccactt 2940  
gtgtagegcc aagtgccagc ggggctgcta aagcgcagtc tccagactgc cttgggaaaa 3000  
gcgcctcccc taccggtag aattcgtaac caagattagc ccacggcgca ttatataccc 3060  
tttaagcccc gccccattta acacgccatg caagttaaac attatctcac cttttattaa 3120  
acttacatca actcattcag caaacaagc cgttaaccac acacgcaatc acaggtttac 3180  
accttatggc ctggggcggt tacagctcaa gtccaaaggt tgcccaggct cgtaagcaa 3240  
gtcctcgata cattccacag cctggcgacg cccaccaact ctacggcaa ctggtttaat 3300  
ggggcacagc gggaccaccg ggtgtatctc aggaggtgtg ttagaaggac cggagtcaca 3360  
gctatccgta ctactattgc attctctaga cacaggtgat gtcgggcgtc tcaggatagc 3420  
aggcgccatt ttaggacggc gggtaggtct tgcaggctcc ggttctggct cgggctcagg 3480  
ctcaggttca gacacaggac cttttaaaaa aatcacaata caaattctt taaaccacaa 3540  
aactgtaaaa attaaaaaaa aaattaccac accaaacca cactctatc accactgcc 3600  
cataattttc acttactgta gacaaacatg ccacaggtcc tcatatagca aagcgaacac 3660  
ataatatctg ggtcccccggt attcctccgg tgataatgac aagacctgca accgtgcccg 3720  
gggtgctcca cataatctaa cacaaactcc tcaccctctt catctcgtc gtcactgggt 3780  
ggaaagccag cctcgtggca ggtaagatcg atcacctccg gtacaagggt tggcatagaa 3840  
accggacca aggtctctg ctccggctgc tcgggctgcc gggaaagggt aggcggctcc 3900  
ggagaaccgg gcgcggcgcg aaaagttagt aagtcaatcc cttectgcac cgccaacatt 3960  
acagagtcgg gaaaaatctg cgaaaccgcc tcctcgttgg gatcttcggg ggccgtcacg 4020  
tctaaatcat acagttcgtg aagggtaggt gggtcaaat ggctaggagg tggagatta 4080  
tcagccagta cctcttcgat cagctggtcc aaaagactgg cggccatttc ttcggtata 4140  
acacctcgt ggcagataat atgtctcatt ttcagtcctg gtgtcggagc ggctcggagg 4200  
agaaaactct actcgtggc actcaagagt ggctcttga ggaactcacc gggataaat 4260  
acactacag tcagctgact ataactcgag aacgaggag ccgactgccg acgtgcgctc 4320  
cggaggcttg cagaatgcgg aacaccgcgc gggcaggaac agggcccaca ctaccgccc 4380  
acaccgccc tccgcaccg ccccttccc ggcgtgctc tcggcgcgcc ctgctgagca 4440  
gccgtattg gccacagccc atcgcggtcg gcgcgtgcc attgctccct ggcgtgtcc 4500  
gtctgcagg gtactagtga gacgtgcggc ttccgtttgt cacgtccggc acgccgcga 4560  
ccgcaaggaa ccttcccgc ttagggcgcg acgaggaagc gtcgcccggg ggcccacaag 4620  
ggtagcggcg aagatccggg tgacgtgctg aacggacgtg aagaatgtgc gagaccagg 4680  
gtcggcgccg ctgctgttcc cggaaccacg cccagagcag ccgctccct gcgcaaaccc 4740  
agggtgctt tggaaaaggc gcaaccccaa ccattaataa ctaatgcatg gcggtataac 4800  
ggttatccac agaatacagg gataacgcag gaaagaacat ggtacggcag tttaaggttt 4860  
acacctataa aagagagagc cgttatcgtc tgtttgtgga tgtacagagt gatattattg 4920  
acacgccggg gcgacggatg gtgatcccc tggccagtgc acgtctgctg tcagataaag 4980  
tctcccgtga actttaccgg gtggtgcata tcggggatga aagctggcgc atgatgacca 5040  
ccgatatggc cagtgtgccg gtctccgtta tcggggaaga agtggctgat ctacgccacc 5100  
gcgaaaatga catcaaaaac gccattaacc tgatgttctg gggaatataa atgtcaggca 5160  
tgagattatc aaaaaggatc ttcacctaga tctttttcac gtagaaagcc agtccgcaga 5220  
aacggtgctg acccggatg aatgtcagct actgggctat ctggacaagg gaaaacgcaa 5280  
gcgcaaagag aaagcaggta gcttgacgtg ggcttacatg gcgatagcta gactggcgcg 5340  
ttttatggac agcaagcgaa ccggaattgc cagctggggc gccctctggt aagggttggg 5400  
agccctgcaa agtaaaactg atggctttct cgccgccaag gatctgatgg cgcaggggat 5460  
caagctctga tcaagagaca ggatgaggat cgtttcgcac gattgaacaa gatggattgc 5520  
acgcaggttc tccggccgct tgggtggaga ggctattcgg ctatgactgg gcacaacaga 5580  
caatcggtg ctctgatgcc gccgtgttcc ggctgtcagc gcagggcgcg ccggttcttt 5640  
ttgtcaagac cgacctgtcc ggtgccctga atgaactgca agacgaggca gcgcggctat 5700  
cgtggctggc cacgacgggc gttccttgcg cagctgtgct cgacgttgct actgaagcgg 5760  
gaagggactg gctgctattg ggcgaagtgc cggggcagga tctcctgtca tctcaccttg 5820



ctcctgccga gaaagtatcc atcatggctg atgcaatgcg gcggctgcat acgcttgatc 5880  
cggctacctg cccattcgac caccaagcga aacatcgcat cgagcgagca cgtactcgga 5940  
tggaagccgg tcttgctgat caggatgatc tggacgaaga gcatcagggg ctgcgcgcag 6000  
ccgaactgtt cgccaggctc aaggcgagca tggccgacgg cgaggatctc gtcgtgacct 6060  
atggcgatgc ctgcttgccg aatatcatgg tggaaaatgg ccgcttttct ggattcatcg 6120  
actgtggccg gctgggtgtg gcggaccgct atcaggacat agcgttggct acccgtgata 6180  
ttgctgaaga gcttggcggc gaatgggctg accgcttcct cgtgctttac ggtatcgccg 6240  
ctcccgatcc gcagcgcatc gccttctatc gccttcttga cgagttcttc tgaattatta 6300  
acgcttaciaa tttcctgatg cggatatttc tccttacgca tctgtgcggg atttcacacc 6360  
gcatacaggt ggcacttttc ggggaaatgt gcgcggaacc cctatttggt tatttttcta 6420  
aatacattca aatatgtatc cgctcatgag acaataaacc tgataaatgc ttcaataata 6480  
ttgaaaaagg aagagtatga gtattcaaca tttccgtgtc gcccttattc ctttttttgc 6540  
ggcattttgc cttcctgttt ttgctcacc agaaacgctg gtgaaagtaa aagatgctga 6600  
agatcagttg ggtgcacgag tgggttacat cgaactggat ctcaacagcg gtaagatcct 6660  
tgagagtttt cgcgccgaag aacgttttcc aatgatgagc acttttaag ttctgctatg 6720  
tggcgcggtt ttatcccgtt ttgacgcggc gcaagagcaa ctcggtcgcc gcataacta 6780  
ttctcagaat gacttggttg agtactcacc agtcacagaa aagcatctta cggatggcat 6840  
gacagtaaga gaattatgca gtgctgcat aaccatgagt gataaactg cggccaactt 6900  
acttctgaca acgatcggag gaccgaagga gctaaccgct tttttgcaca acatggggga 6960  
tcattgtaact cgccttgatc gttgggaacc ggagctgaat gaagccatac caaacgacga 7020  
gcgtgacacc acgatgcctg tagcaatggc aacaacgttg cgcaaactat taactggcga 7080  
actacttact ctgacttccc ggcaacaatt aatagactgg atggaggcgg ataaagttgc 7140  
aggaccactt ctgcgctcgg cccttccggc tggctggttt attgctgata aatctggagc 7200  
cggtgagcgt gggctctcgg gtatcattgc agcactgggg ccagatggta agccctcccg 7260  
tatcgtagtt atctacacga cggggagtca ggcaactatg gatgaacgaa atagacagat 7320  
cgctgagata ggtgcctcac tgattaagca ttggttaactg tcagaccaag tttactcata 7380  
tatactttag attgatttaa aacttcattt ttaatttaa aggatctagg tgaagatcct 7440  
ttttgataat ctcatgacca aaatccctta acgtgagttt tcgttccact gagcgtcaga 7500  
ccccgtagaa aagatcaaag gatcttcttg agatcctttt tttctgcggc taatctgctg 7560  
cttgcaaaaca aaaaaaccac cgctaccagc ggtggtttgt ttgccggatc aagagctacc 7620  
aactcttttt ccgaaggtaa ctggcttcag cagagcgagc ataccaata ctgtccttct 7680  
agtgtagccg tagttaggcc accacttcaa gaactctgta gcaccgccta catacctcgc 7740  
tctgctaata ctgttaccag tggctgctgc cagtggcgat aagtcgtgtc ttaccgggtt 7800  
ggactcaaga cgatagttac cggataaggc gcagcggtcg ggctgaacgg ggggttcgtg 7860  
cacacagccc agcttgagc gaacgaccta caccgaactg agatacctac agcgtgagct 7920  
atgagaaagc gccacgcttc ccgaaggag aaaggcggac aggtatccgg taagcggcag 7980  
ggtcggaaca ggagagcgca cgaggagct tccaggggga aacgcctggt atctttatag 8040  
tctgtcggg tttcgccacc tctgacttga gcgtcgattt ttgtgatgct cgtcaggggg 8100  
gcggagccta tggaaaaacg ccagcaacgc ggccttttta cggttcctgg gcttttgctg 8160  
gccttttgct cacatgttct ttcctgcgtt atccctgat tctgtggata accgtattac 8220  
cgcttttgag tgagctgata ccgctcgccg cagccgaacg accgagcgca gcgagtcagt 8280  
gagcgaggaa gcggaag 8297

<210> 10

<211> 7174

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Plasmid 25F

<400> 10

agcgcccaat acgcaaaccg cctctccccg cgcgttggcc gattcattaa tgcagctggc 60  
acgacaggtt tcccgaactg aaagcgggca gtgagcgcaa cgcaattaat gtgagttage 120  
tactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa 180  
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaaactca 240  
gaattaaccc tactaaagg gactagtcct gcagggttaa acgaattcgc ccttaatctt 300  
aagctcggga gtagcggatg ccccggggag aggagtgtta gtaaccgcga cgctgggtggg 360  
ggtcggcttg ttaagagggg cgctgctaac gctgcaagag tgggtgtgca gcgtggggcc 420  
gggtgctactg gaatcgatac cggcatgatt gacagcctgg gcgaggatgt cacctgatgg 480  
tgataagaag acacgggaga cttagtacgg tttcacaggc gtgacacgtt tattgagtag 540  
gattacagag tataacatag agtataatat agagtataca atagtacgt gggatccgtt 600



```

aacaggtgaa ccatttatac agtctcacgt ctctttattg catacgctcc gctaaatgtt 660
tccattcgct catttgccag taatacagca gattcgcaaa ctactgaac caatcttctg 720
tataaaaatg tacgcgctgc gtgtccaaat caacatcaat ttctctcata tacagacagg 780
ggctgccacc cgctccccc aagcgcgaca ccgcaattag gaatggtagc ctgctgtgca 840
ggtccacgtg aattaacatc ccgcacacgt tcccgatcgg tcgctgcata aatactggag 900
agaaatcgct aaaccccggt gacgcccaca tagccacgaa gtacaccctt gccacattca 960
agtcatectc caacctggcc caaacataag tggccaaatc ggaaggagcc aggtggcaag 1020
ccgataaccc catacgatgc aaaggttaacc cgtggcaagc gcatcccccg aaatgaagtt 1080
cgaaagaatc gtaacacagt agctgatagg catgaagcgg cgtcggcatc tgaagaccgt 1140
catcatcttc gtctgtcttc atgtcatccc caacttctc ctgcgctcc gcttctgtt 1200
ggcggcgctg ctggtgctgc agcaccatct ccaggatctg ctgctcgttc atcttaatcc 1260
ggactcgaga aaggcccgga gatgaggaag aggagaacag cgcggcagac gtgcgctttt 1320
gaagcgtgcg agaatgccgg gcctccggag gaccttcggg cgcgcgccc gccctgagc 1380
ccgcccctga gcccgcctcc ggacccaccc ctcccagcc tctgagccca gaaagcgaag 1440
gagcaaagct gctattggcc gctgccccaa aggcctacc gcttccattg ctacgcggtg 1500
ctgtccatct gcacgagact agtgagacgt gctacttcca tttgtcacgt cctgcacgac 1560
gcgagctgcg gggcgggggg gaacttcctg actaggggag gactagaagg tggcgcgagg 1620
gggccaccaa agaacggagc cggttggcgc ctaccgggtg atgtggaatg tgtgcgaggc 1680
cagaggccac ttgtgtagcg ccaagtgcc aaggggctgc taaagcgcac gctccagact 1740
gccttgggaa aagcgcctcc cctaccgggt agaattcgcg gcctcgacgg cctcgggtggc 1800
cagtctagtc aataatcaat gtccgagctc gaatacactc cgctatcgct acgtgactgg 1860
gtcatggctg cgcggcgaca cccgccaaca cccgctgacg cgccctgacg ggcttgtctg 1920
ctcccgcat ccgcttacag acaagctgtg accgtctccg ggagctgcat gtgtcagagg 1980
tttccacgt catcaccgaa acgcgcgagg cagccggatc ataatcagcc ataccacatt 2040
tgtagagggt ttacttgctt taaaaaacct cccacacctc cccctgaacc tgaaacataa 2100
aatgaatgca attgttgttg ttaacttgtt tattgcagct tataatgggt acaataaag 2160
caatagcatc acaaatttca caaataaagc atttttttca ctgcattcta gttgtggttt 2220
gtccaaactc atcaatgtat cttatcatgt ctggatcgaa gctctagagc ggccaacttc 2280
agggatttgt tacagagaat ggtaggggtg gtgccgagac ccgagtcctc gcctactcat 2340
acgtaggcag gtttccatga caccagctc tgcccaatct tggagagaat ggggatttct 2400
gggttcattt ctctcggggg cggggctatc cccgcccaga gtcatacacc aaatttctgt 2460
agaaaacgga tttttgccag tcttgatggc acaaacttcg ggagtttgtt taaaaaatcg 2520
gctgaagaat ggttctggaa gtgttctttt cagatctttt ttggtgaaaa ctccagtgg 2580
caggagccga tattgtcggg gggctttgat ggtggtggtc ccacagagac cctcatagcc 2640
agggaccccc actccgcgag ggacatggat cttcagtggt tctagcgcca tcttcagggc 2700
atgcacggaa ccaatgggga agcccaggtc cccacgtgg gttatgccgt gggggagggg 2760
atccgagtat tccctggcca ccaatcagg aaccgcgaac gcgccacgga ccgccttctc 2820
catcataatg agggcctcac tgggggtctt ggggtccgcg gagcgcctcc taatggtaac 2880
gtggataatg cgctggggac cctcgtagtc tgcgaagatt gcctttctcc ccatggacac 2940
tagggggctg aatgagtatt ccgcagttg ctgcgggtc aggttagggg taaaaatcag 3000
gccggtggtc accatttctc taaggctagt ggtgggattc cgctggctag ggtccacagg 3060
gaccacgaa gttaaaggaa tgggtcccat gtagtatgga aggtccccag ggaaatgagc 3120
gaatgggttg cgggcccatac ctgtagaatg tacagggggg tctcgagaac gagggagccg 3180
actgccgagc tgcgctccgg aggtctgcag aatgcggaac accgcgcggg caggaacagg 3240
gccacacta ccgcccaca cccgcctcc cgcaccgcc ctcccgggc gctgctctcg 3300
gcgcgcctg ctgagcagcc gctattggcc acagcccatc gcggtcggcg cgctgccatt 3360
gctccctggc gctgtccgtc tgcgagggt aatagtagac gtgcggcttc cgtttgtcac 3420
gtccggcacg ccgcgaaccg caaggaacct tcccactta gggcgggac aggaagcgtc 3480
gccggggggc ccacaagggt agcggcgaag atccgggtga cgctgcgaac ggacgtgaag 3540
aatgtgcgag acccagggtc ggcgcgctg cgtttcccg aaccacgcc agagcagccg 3600
cgtccctgcg caaaccagg gctgccttgg aaaaggcgca accccaacca ttaataacta 3660
atgcatggcg gtaatacgtt tatccacaga atcaggggat aacgcaggaa agaactggt 3720
acggcagttt aaggtttaca cctataaaag agagagccgt tatcgtctgt ttgtggatgt 3780
acagagtgat attattgaca cgcggggcg acggatgggt atccccctg ccagtgcacg 3840
tctgctgtca gataaagtct cccgtgaact ttaccgggtg gtgcatatcg gggatgaaag 3900
ctggcgcatg atgaccaccg atatggccag tgtgccggtc tccgttatcg gggaagaagt 3960
ggctgatctc agccaccgcg aaaatgacat caaaaacgcc attaacctga tgttctgggg 4020
aatataaatg tcaggcatga gattatcaaa aaggatcttc acctagatcc ttttcacgta 4080
gaaagccagt ccgcagaaac ggtgctgacc ccgatgaat gtcagctact gggctatctg 4140
gacaagggaa aacgcaagcg caaagagaaa gcaggtagct tgcagtgggc ttacatggcg 4200
atagctagac tgggcgggtt tatggacagc aagcgaaccg gaattgccag ctggggcgcc 4260
ctctggtgta gttgggaagc cctgcaaagt aaactggatg gctttctcgc cgccaaggat 4320
ctgatggcgc aggggatcaa gctctgatca agagacagga tgaggatcgt ttcgcatgat 4380

```

```

tgaacaagat ggattgcacg caggttctcc ggccgcttgg gtggagaggc tattcggcta 4440
tgactgggca caacagacaa tgggtgctc tgatgccgcc gtgttccggc tgtcagcgca 4500
ggggcgcccg gttctttttg tcaagaccga cctgtccggt gccctgaatg aactgcaaga 4560
cgaggcagcg cggtatcgt ggctggccac gacgggcgtt ccttgccgag ctgtgctcga 4620
cgttgtcact gaagcgggaa gggactggct gctattgggc gaagtgcggg ggcaggatct 4680
cctgtcatct cacttgctc ctgccgagaa agtatccatc atggctgatg caatgcggcg 4740
gctgcatacg cttgatccgg ctacctgcc attcgaccac caagcgaaac atcgcatcga 4800
gcgagcacgt actcggatgg aagccggtct tgtcgatcag gatgatctgg acgaagagca 4860
tcaggggctc ggcgcagccg aactgttcgc caggctcaag gcgagcatgc ccgacggcga 4920
ggatctcgtc gtgacctatg gcgatgcctg cttgccgaat atcatggtgg aaaatggccg 4980
cttttctgga ttcacgact gtggccggct ggggtgtggcg gaccgctatc aggacatagc 5040
gttggctacc cgtgatattg ctgaagagct tggcggcgaa tgggctgacc gcttcctcgt 5100
gctttacggg atcgccgctc ccgattcgca gcgcategcc ttctatcgcc ttcttgacga 5160
gttcttctga attattaacg cttacaattt cctgatgcgg tattttctcc ttacgcatct 5220
gtgcggtatt tcacaccgca tacagggtggc acttttcggg gaaatgtgcg cggaaccctt 5280
atltgtttat ttttctaaat acattcaa atgtatccgc tcatgagaca ataaccctga 5340
taaagtcttc aataatattg aaaaaggaag agtatgagta ttcaacattt ccgtgtcgcc 5400
cttattccct tttttgcggc attttgcctt cctgtttttg ctcaccaga aacgctgggtg 5460
aaagtaaaag atgctgaaga tcagttgggt gcacgagtggt gttacatcga actggatctc 5520
aacagcggta agatccttga gagttttcgc cccgaagaac gttttccaat gatgagcact 5580
tttaagttc tgctatgtgg cgcggtatta tcccgtattg acgcccggca agagcaactc 5640
ggtcgcgcga tacactattc tcagaatgac ttggttgagt actcaccagt cacagaaaag 5700
catcttacgg atggcatgac agtaagagaa ttatgcagtg ctgccataac catgagtgat 5760
aacactgcgg ccaacttact tctgacaacg atcggaggac cgaaggagct aaccgctttt 5820
ttgcacaaca tgggggatca tgtaaactcg cttgatcggt gggaaccgga gctgaatgaa 5880
gccataccaa acgacgagcg tgacaccacg atgcctgtag caatggcaac aacgttgccg 5940
aaactattaa ctggcgaact acttactcta gcttcccggc aacaattaat agactggatg 6000
gaggcggata aagttgcagg accacttctg cgctcggccc ttccggctgg ctggtttatt 6060
gctgataaat ctggagccgg tgagcgtggg tctcgcggta tcattgcagc actggggcca 6120
gatggtaagc cctcccgtat cgtagttatc tacacgacgg ggagtcaggc aactatggat 6180
gaacgaaata gacagatcgc tgagataggt gcctcactga ttaagcattg gtaactgtca 6240
gaccaagttt actcatatat acttttagatt gatttaaaac ttcattttta atttaaaagg 6300
atctaggtga agatcctttt tgataatctc atgacaaaaa tcccttaacg tgagttttcg 6360
ttccactgag cgtcagaccc cgtagaaaag atcaaaggat cttcttgaga tcc'tttttt 6420
ctgcgcgtaa tctgctgctt gcaaacaaaa aaaccaccgc taccagcggg ggtttgtttg 6480
ccggatcaag agctaccaac tctttttccg aaggtaactg gcttcagcag agcgcagata 6540
ccaataactg tccttctagt gtageccgtg ttaggccacc acttcaagaa ctctgtagca 6600
ccgcctacat acctcgctct gctaactcctg ttaccagtgg ctgctgccag tggcgataag 6660
tcgtgtctta ccgggttgga ctcaagacga tagttaccgg ataaggcgca gcggtcgggc 6720
tgaacggggg gtctgtgcac acagcccagc ttggagcgaa cgacctacac cgaactgaga 6780
tacctacagc gtgagctatg agaaagcgcc acgcttcccg aaggagagaa ggcgacagag 6840
tatccggtaa gcggcagggt cggaacagga gagcgcacga gggagcttcc agggggaaac 6900
gcctggtatc tttatagtcc tgtcgggttt cgccacctct gacttgagcg tcgatttttg 6960
tgatgctcgt caggggggcg gagcctatgg aaaaacgcca gcaacgcggc ctttttacgg 7020
ttcctgggct tttgctggcc ttttgctcac atgttctttc ctgcgttatc cctgattctt 7080
gtggataacc gtattaccgc ctttgagtga gctgataccg ctcgcccgag ccgaacgacc 7140
gagcgcagcg agtcagtgag cgaggaagcg gaag 7174

```

&lt;210&gt; 11

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer V206

&lt;400&gt; 11

aacctcgaga cccccctgta cattcta

27

&lt;210&gt; 12

&lt;211&gt; 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer V207

<400> 12

gccgttaact tcagggattg gttacag

27

<210> 13

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer V208

<400> 13

cacctcgagt ccgattaag atgaacg

27

<210> 14

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer V209

<400> 14

ccagttaaca ggtgaaccat ttatacag

28

<210> 15

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: RT primer

<400> 15

gcctttgaga gttactcttt g

21

<210> 16

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer cDNA 1

<400> 16

aaacactgta cggcaccgc att

23

<210> 17

<211> 21

<212> DNA

<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer cDNA 2

&lt;400&gt; 17

gcctttgaga gttactcttt g

21

&lt;210&gt; 18

&lt;211&gt; 8681

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Plasmid 60E

&lt;400&gt; 18

```
agcgcccaat acgcaaaccg cctctccccg cgcgttgccg gattcattaa tgcagctggc 60
acgacagggt tcccgaactg aaagcgggca gtgagcgcaa cgcaattaat gtgagttagc 120
tactcatta ggcaccccag gctttacact ttatgcttcc ggctcgatg ttgtgtggaa 180
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gccaaagctca 240
gaattaaccc tactaaagg gactagtcct gcagggttct agtcctgcag gtttaaaca 300
attcgccctt aatcttaagc tgccgccccg acgttggttg cgagccctgg gccttcaccc 360
gaacttgggg ggtggggtgg ggaaaaggaa gaaacgcggg cgtattggcc ccaatgggg 420
ctcgggtggg tatcgacaga gtgccagccc tgggaccgaa cccgcggtt atgaacaaac 480
gacccaacac cgtgcgtttt attctgtctt ttattgccc tcatagcgcg ggttccttcc 540
ggtattgtct ccttcggtgt taccctcaat ctgtatcttc atcgctagag ccaaactcag 600
cgcgggtgca ggccagcacc aagtgatecg gcctcagctc ctcggtcaca tccagcatca 660
caggctggtt cctaataatgt ttaccgccac actcgcaggg tctgcacctg gtgcgggtct 720
catcgtacct cagcaccttc cagatcttca tggatcatgt aaacaccccg ttcagggtca 780
ccttggacat gctctcgggc tcaagcaata tcttagtgtg actcaaattg cattggtaag 840
gtaggaacac cccctcctg ttacccaaat gcaaggaaca gcgggtcagt atgttatgct 900
caaacactgg ccaggccttg cgagagtggc tggctacgtg aatggtcttc agcagggtgac 960
agttgcccgc cgagcaggtc agcatctgag aggcctgtc ctgcagttg ccacatacca 1020
tgttatgctt aatcacagcc acgcttttca ctagcatgaa gcaaccacag tcggaggcca 1080
cattgtggcg caccctggag ttaccctcag acaggatacc caaggtacac ctttcaaaga 1140
ggcatttctt aattgaagcc ctgcttttgg ggcgacacac cacccttct cagcagcagt 1200
aaaaggcaca gcccgaacc cttacatcgg tccaggtctc cacacaggta ttgttaaacc 1260
catagaagct tacaccgtgt aggataaggt tggatattgg caggaaaacc gtaccgctaa 1320
aattggggcc agtaaacctt acattcataa taaccacccc gtccatgcca agcaccctcg 1380
gccacatatt tatcatgcta catctaaagg ccaccctatc ctccgtatct atctccacct 1440
cggccccgtt ccagaaatg tagcaacaat tctgatatt tacaagtttg ctgatcttgt 1500
acttgcaatc tggcctaagt gccaccttgg catataccct aatagcctcc tcaaaatcat 1560
cccctggctg cagccagtaa gtggtcagct gctctatgga atacttctgc gccagcagat 1620
caagctcatt agcgcaatta tcttgatct gttgaaaagt aatacactca ggacgggtgtc 1680
tggtcattaa gctaaaagct agattcctag cctcctctgt agcctcaca gccccccgct 1740
ccctctttac ccccttttag cctgccccat cctctgtaat tgtcaaatg cgtctcagtt 1800
ctggatacag ttcagccacc tgtacaacat tcattcccga ggggtccaggc cggctctcgg 1860
gttccatggg ctctgctcct gccgcgcgg cctggcttcc tctgctgct gctgctgctc 1920
ctccgtcggg attatcgccg ggcggacgga agacaacagt agcaggcgat tcttgtgtct 1980
cacaaccgct ctccacagat gcatggccag aaaatccagc aggtaccccc cgctcagatg 2040
ggttttcttc ctccatttat cttttataaa actcaaaaaa gcaacagcag ccgcagcgcg 2100
ccccggtgtg gaaaaatcca aagtcttgat gaccttctct tggaaaagcg cctggtgacc 2160
cagattcaaa gaatcaaca gctcaccaca ggatttcaaa agctcttcaa attcccactt 2220
gtaatcctcc ttaattctgc agactaactt tgcctgggat gagccccaca gaaacctcca 2280
aaaccaagag gtactgttag agctctgttc cagcaagtta cgcacagcag aaaaatcttc 2340
caaacactcc caagcctcca tgcctgagat ccttcctcct cgggcgggtg tggaccaccg 2400
cctcgctct ctccggaaaa aaaaaatgaa ataaacaaca aaaccgaaca aaagcgaaac 2460
gccacggatg gagcgcaaaa cctcttctga agttctgcga ctgcacacag acagtcaaat 2520
ggagcagagc caggcgagcg accgcccagc ccgcagtagc gcgcaggtct ggggaagaga 2580
ggcgaggtta ggggatctga gtccggtagc gatctgcggc acgctgttga cgctgttaag 2640
cgggtcgtg cagggtcgtc cggatttcca ggccacacgc gtcaccttaa tatgcgaagt 2700
ggacctggga ccgcgccgce ccgactgcat ctgcgtgttc gaattcgcca atgacaagac 2760
gctgggcggg gtttgtgtca tcatagaact aaagacatgc aaatatattt cttccgggga 2820
```



caccgccagc aaacgcgagc aacggggccac ggggatgaag cagctgcgcc actccctgaa 2880  
gctcctgcag tccctcgcgc ctccgggtga caagatagt tacctgtgcc ccgtcctggt 2940  
gtttgtcgcc caacggacgc tccgcgtcag ccgcgtgacc cggctcgtcc cgcagaaggt 3000  
ctccggtaat atcaccgcag tcgtgcggat gctccagagc ctgtccacgt atacggtccc 3060  
cattgagcct aggaccagc gagcccgctc cgcgcgcggc ggcgcgcgcc gggggtctgc 3120  
gagcagaccg aaaaggtcac actctggggc gcgcgaccgc cccgagtcag cggcccgcca 3180  
gttaccaccc gccgaccaa cccccacctc cacggagggc gggggggtgc ttaagaggat 3240  
cgcggcgcctc ttctgcgtgc ccgtggccac caagaccaa ccccgagccg cctccgaatg 3300  
agagtgttcc gtctcttccc cctccccccg cgtcagacaa accctaacca ccgcttaagc 3360  
ggcccccgcg aggtccgaag actcatttgg atccactaga aacgaattcg taaccaagat 3420  
tagccacagg cgcattatat accctttaag ccccgcccca tttaacacgc catgcaagtt 3480  
aaacattatc tcacccttta ttaaaacttac atcaactcat tcagcaaaca aaggcgtaa 3540  
ccacacacgc aatcacaggt ttacacctta tggcctgggg cgtttacagc tcaagtccaa 3600  
aggttgcccga ggctcgtaa gcaagtcctc gatacatc acagcctggc gacgcccacc 3660  
aactctcagc gcaactggtt taatggggca cagcgggacc accgggtgta tctcaggagg 3720  
tgtgttagaa ggaccggagt cacagctatc cgtactacta ttgcattctc tagacacagg 3780  
tgatgtcggg cgtctcagga tagcaggcgc catitttagga cggcgggtag gtcttgacag 3840  
ctccggttct ggctcgggct caggtcagg ttccagacaca ggacctttaa aaaaaatcac 3900  
aatacaaaat tctttaaac acaaaactgt aaaaattaaa aaaaaatta ccacaccaa 3960  
cccaccactc tatcaccac tgcccataat ttccacttac tctagacaaa catgccacag 4020  
gtcctcatat agcaaagcga acacataata tctgggtccc ccgtattcct ccggtgataa 4080  
tgacaagacc tgcaaccgtg cccgggggtgc tccacataat ctaacacaaa ctctcacc 4140  
tcttcactct cgtcgtcact ggggtgaaag ccagcctcgt ggcaggttag atcgatcacc 4200  
tccggtacaa ggtttggcat agaaaccgga cccaaggctc tctgctccgg ctgctcgggc 4260  
tgccgggaaa ggtgaggcgg ctccggagaa cggggcgccg gcggaaaagt gagtaagtca 4320  
atcccttctt gcaccgcaa cattacagag tcgggaaaaa tctgcgaaac cgcctcctcg 4380  
ttgggatctt cgggggcccgt caggtctaaa tcatacagtt cgtgaagggt aggtggttca 4440  
aaatggctag gaggtggaag attatcagcc agtacctctt cgatcagctg gtccaaaaga 4500  
ctggcggcca tttcttcggt aataacacct ccgtggcaga taatatgtct cattttcagt 4560  
cccgtgtcgc gagcggctcg gaggagaaaa ctctactcgc tggcactcaa gaggggctc 4620  
ttgaggaact caccgggtat aaatacacta cacgtcagct gactataact cgagaacgag 4680  
ggagccgact gccgacgtgc gctccggagg cttgcagaat gcggaacacc gcgcgggcag 4740  
gaacagggcc cactactacc cccacacccc cgcctcccgc accgcccctt cccggccgct 4800  
gctctcggcg cgcctgctg agcagccgct attggccaca gcccatcgcg gtcggcgcg 4860  
tgccattgct cctggcgct gtccgtctgc gagggtacta gtgagacgtg cggcttccgt 4920  
ttgtcacgtc cggcacgcgc cgaaccgcaa ggaaccttcc cgacttaggg gcggacgagg 4980  
aagcgtcgcc ggggggccc caagggtagc ggcgaagatc cgggtgacgc tgcgaacgga 5040  
cgtgaagaat gtgcgagacc cagggtcggc gccgtcgtc tccccggaac cacgccaga 5100  
gcagcccgct ccctgcgcaa acccagggtt gccttgaaa aggcgcaacc ccaaccatta 5160  
ataactaatg catggcggtat atacggttat ccacagaatc aggggataac gcaggaaaga 5220  
acatggtacg gcagtttaag gtttacacct ataaaagaga gagccgttat cgtctgtttg 5280  
tggtgtgaca gaggatatt attgacacgc cggggcgacg gatggtgatc cccctggcca 5340  
gtgcacgtct gctgtcagat aaagtctccc gtgaacttta cccggtggtg catatcgggg 5400  
atgaaagctg gcgcagatg accaccgata tggccagtgt gccggtctcc gttatcgggg 5460  
aagaagtggc tgatctcagc caccgcgaaa atgacatcaa aaacgccatt aacctgatgt 5520  
tctggggaat ataaatgtca ggcagagat tatcaaaaag gatcttcacc tagatccttt 5580  
tcacgtagaa agccagtccg cagaaacggt gctgaccccg gatgaatgtc agctactggg 5640  
ctatctggac aagggaacaa gcaagcgcaa agagaaagca ggtagcttgc agtgggctta 5700  
catggcgata gctagactgg gcggttttat ggacagcaag cgaaccggaa ttgccagctg 5760  
gggcgcctc tggtaagggt gggaagccct gcaaagtaaa ctggatggct ttctcgcgc 5820  
caaggatctg atggcgagg ggatcaagct ctgatcaaga gacaggatga ggatcgttc 5880  
gcatgattga acaagatgga ttgcacgcag gttctccggc cgcttgggtg gagaggctat 5940  
tcggctatga ctgggcacaa cagacaatcg gctgctctga tgccgcgtg ttccggctgt 6000  
cagcgcaggg gcgcccgtt ctttttgtca agaccgacct gtccggtgcc ctgaatgaac 6060  
tgcaagacga ggcagcgcg ctatcgtggc tggccacgac gggcgttcct tgcgcagctg 6120  
tgctcgacgt tgtcactgaa gcgggaagg actggctgct attggcgaa gtgccggggc 6180  
aggatctcct gtcactcac cttgctcctg ccgagaaagt atccatcatg gctgatgcaa 6240  
tgcgccggct gcatacgctt gatccggcta cctgccatt cgaccaccaa gcgaaacatc 6300  
gcatcgagcg agcacgtact cggatggaag ccggtcttgt cgatcaggat gatctggacg 6360  
aagagcatca ggggctcgcg ccagccgaac tgttcgccag gctcaaggcg agcatgcccg 6420  
acggcgagga tctcgtcgtg acccatggcg atgcctgctt gccgaatata atggtgaaa 6480  
atggccgctt ttctggattc atcgactgtg gccggctggg tgtggcgagc cgctatcagg 6540  
acatagcgtt ggctaccctg gatattgctg aagagcttgg cggcgaatgg gctgaccgct 6600

tcctcgtgct ttacggtatc gccgctcccg attcgcagcg catcgccctc tatcgccctc 6660  
ttgacgagtt cttctgaatt attaacgctt acaatttcct gatgcggtat tttctcctta 6720  
cgcatctgtg cggatatttc caccgcatac aggtggcact tttcggggaa atgtgcgcgg 6780  
aacccttatt tgtttatttt tctaaataca ttcaaatacg tatccgctca tgagacaata 6840  
accctgataa atgcttcaat aatattgaaa aaggaagagt atgagtattc aacatttccg 6900  
tgtcgccctt attccctttt ttgcggcatt ttgccttcct gtttttgctc acccagaaac 6960  
gctggtgaaa gtaaaagatg ctgaagatca gttgggtgca cgagtgggtt acatcgaact 7020  
ggatctcaac agcggtaaga tccttgagag ttttcgcccc gaagaacggt ttccaatgat 7080  
gagcactttt aaagtctctg tatgtggcgc ggtattatcc cgtattgacg ccgggcaaga 7140  
gcaactcggg cgccgcatac actattctca gaatgacttg gttgagtact caccagtcac 7200  
agaaaagcat cttacggatg gcatgacagt aagagaatta tgcagtgtcg ccataaccat 7260  
gagtataaac actgcggcca acttacttct gacaacgacg ggaggaccga aggagctaac 7320  
cgcttttttg cacaacatgg gggatcatgt aactcgcctt gatcgttggg aaccggagct 7380  
gaatgaagcc ataccaaacg acgagcgtga caccacgatg cctgtagcaa tggcaacaac 7440  
gttgcgcaaa ctattaactg gcgaactact tactctagct tcccggcaac aattaataga 7500  
ctggatggag gcggataaag ttgcaggacc acttctgcgc tcggcccttc cggctggctg 7560  
gtttattgct gataaatctg gagccggtga gcgtgggtct cgcggtatca ttgcagcact 7620  
ggggccagat ggtaagccct cccgtatcgt agttatctac acgacgggga gtcaggcaac 7680  
tatggatgaa cgaaatagac agatcgctga gatagggtgc tcaactgatta agcattggta 7740  
actgtcagac caagtttact catatatact tttagattgat ttaaaacttc atttttaatt 7800  
taaaaggatc taggtgaaga tcctttttga taatctcatg accaaaatcc cttaacgtga 7860  
gttttcgctc cactgagcgt cagaccccggt agaaaagatc aaaggatctt cttgagatcc 7920  
ttttttctg cgcgtaatct gctgcttgca aacaaaaaaa ccaccgctac cagcgggtgt 7980  
ttgtttgccg gatcaagagc taccaactct ttttcggaag gtaactggct tcagcagagc 8040  
gcagatacca aatactgtcc ttctagtgtg gccgtagtta ggccaccact tcaagaactc 8100  
tgtagcaccg cctacatacc tcgctctgct aatcctgtta ccagtggctg ctgccagtgg 8160  
cgataagtcg tgtcttaccg ggttggaactc aagacgatag ttaccggata aggcgcagcg 8220  
gtcgggctga acgggggggt cgtgcacaca gccagcttg gagcgaacga cctacaccga 8280  
actgagatac ctacagcgtg agctatgaga aagcgccacg cttcccgaag ggagaaaggc 8340  
ggacaggat cgggtaagcg gcagggtcgg aacaggagag cgcacgaggg agcttccagg 8400  
gggaaacgcc tggatatctt atagtctctg cgggtttcgc cacctctgac ttgagcgtcg 8460  
atttttgtga tgctcgtcag gggggcggag cctatggaaa aacgccagca acgcggcctt 8520  
tttacggttc ctgggctttt gctggccttt tgctcacatg ttctttcctg cgttatcccc 8580  
tgattctgtg gataaccgta ttaccgcctt tgagttagct gataccgctc gccgcagccg 8640  
aacgaccgag cgcagcgagt cagtgagcga ggaagcggaa g 8681

<210> 19

<211> 5428

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Plasmid 36E

<400> 19

tcttccgctt cctcgcctac tgactcgtg cgctcggctg ttcggtcgc gcgagcggta 60  
tcagctcact caaaggcggg aatacgggta tccacagaat caggggataa cgcaggaaag 120  
aacatgtgag caaaaggcca gcaaaagccc aggaaccgta aaaaggccgc gttgctggcg 180  
tttttccata ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg 240  
tggcgaaaacc cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg 300  
cgctctcctg ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga 360  
agcgtggcgc tttctcatag ctacgcgtgt aggtatctca gttcgggtgta ggtcgttcgc 420  
tccaagctgg gctgtgtgca cgaacccccc gttcagcccc accgctgcgc cttatccggt 480  
aactatcgtc ttgagtccaa cccggtaaga cagcacttat cgccactggc agcagccact 540  
ggtaacagga ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtgggtg 600  
cctaactacg gctacactag aaggacagta tttgggtatct gcgctctgct gaagccagtt 660  
accttcggaa aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggg 720  
ggtttttttg tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct 780  
ttgatctttt ctacgggggtc tgacgctcag tggaaacgaaa actcacgtta agggattttg 840  
gtcatgagat tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt 900  
aatcaatct aaagtatata tgagtaaact tgggtctgaca gttaccaatg cttaatcagt 960  
gaggcaccta tctcagcgat ctgtctattt cgttcaccca tagttgcctg actccccgtc 1020

gtgtagataa ctacgatacg ggagggctta ccatctggcc ccagtgtctgc aatgataaccg 1080  
 cgagacccac gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc 1140  
 gagcgcagaa gtggctctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg 1200  
 gaagctagag taagtagttc gccagttaat agtttgcgca acgttggtgc cattgctaca 1260  
 ggcacgtgg tgtcacgctc gtcgttttgt atggcttcat tcagctccgg ttcccaacga 1320  
 tcaaggcgag ttacatgata ccccatgttg tgcaaaaaag cggtagctc cttcggtcct 1380  
 ccgacgttg tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg 1440  
 cataattctc ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca 1500  
 accaagtcac tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaata 1560  
 cgggataata ccgcgccaca tagcagaact ttaaaagtgc tcatcattgg aaaacgttct 1620  
 tcggggcgaa aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaaccact 1680  
 cgtgcaccca actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa 1740  
 acaggaaggc aaaatgcgcg aaaaaaggga ataaggcgca cacggaaatg ttgaatactc 1800  
 atactcttcc tttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga 1860  
 tacatatttg aatgtattta gaaaaataaa caaatagggg ttccgcgcac atttccccga 1920  
 aaagtgcac ctgtatgcgg tgtgaaatac cgcacagatg cgtaaggaga aaataccgca 1980  
 tcaggaaatt gtaagcgtaa ataattcaga agaactcgtc aagaaggcga tagaaggcga 2040  
 tgcgtgcga atcgggagcg gcgataccgt aaagcacgag gaagcggta gccattcgc 2100  
 cgccaagctc ttcagcaata tcacgggtag ccaacgctat gtcctgatag cggtcgcga 2160  
 caccagccg gccacagtcg atgaatccag aaaagcggcc attttccacc atgatattcg 2220  
 gcaagcaggc atcgccatgg gtcacgacga gatcctcgcc gtcgggcatg ctgccttga 2280  
 gcctggcgaa cagttcggct ggcgcgagcc cctgatgctc ttctccaga tcatcctgat 2340  
 cgacaagacc ggcttccatc cgagtacgtg ctgcctcgat gcgatgttct gcttggtgg 2400  
 cgaatgggca ggtagccgga tcaagcgtat gcagccgccc cattgcatca gccatgatgg 2460  
 atactttctc ggcaggagca aggtgagatg acaggagatc ctgcccggc acttcgccc 2520  
 atagcagcca gtcccttccc gcttcagtga caacgtcgag cacagctgcg caaggaacgc 2580  
 ccgtcgtggc cagccacgat agccgcgctg cctcgtcttg cagttcattc agggcaccgg 2640  
 acaggtcggc cttgacaaaa agaaccgggc gccctgcgc tgacagccgg aacacggcgg 2700  
 catcagagca gccgattgtc tgttggtccc agtcatagcc gaatagcctc tccaccaag 2760  
 cggccggaga acctgcgtgc aatccatctt gttcaatcat gcgaaacgat cctcatcctg 2820  
 tctcttgatc agagcttgat ccctgcgc atcagatcct tggcgcgag aaagccatcc 2880  
 agtttacttt gcagggttc ccaaccttac cagagggcgc cccagctggc aattccggtt 2940  
 cgcttgctgt ccataaaacc gccagctca gctatcgcca tgtaagcca ctgcaagcta 3000  
 cctgctttct ctttgcgctt gcgttttccc ttgtccagat agcccagtag ctgacattca 3060  
 tccggggtca gcaccgttct tgcggactgg ctttctacgt gaaaaggatc taggtgaaga 3120  
 tcctttttga taatctcatg cctgacattt atattcccca gaacatcagg ttaatggcgt 3180  
 ttttgatgtc attttcgcgg tggctgagat cagccacttc ttcccagata acggagaccg 3240  
 gcacactggc catatcgggtg gtcacatgc gccagcttct atcccagata tgcaccaccg 3300  
 ggtaaagttc acgggagact ttatctgaca gcagacgtgc actggccagg gggatcacca 3360  
 tccgtcgccc cggcgtgtca ataatatcac tctgtacatc cacaacaga cgataacggc 3420  
 tctctctttt atagggtgaa acctaaact gccgtacgta taggctgcgc aactgttggg 3480  
 aaggcgatc ggtgcgggccc tcttcgctat tacgccagct ggcgaaagg ggatgtgtg 3540  
 caaggcgatt aagttgggtc acgccagggt tttcccagtc acgacgttgt aaaacgacgg 3600  
 ccagtgaatt gtaatacgac tcaactatagg gcgaattgaa tttagcggcc gcgaattcta 3660  
 ccgggtaggg gaggcgcttt tcccaaggca gtctggagca tgcgctttag cagccccgct 3720  
 ggcacttggc gctacacaag tggcctctgg cctcgcacac attccacatc caccggtagg 3780  
 cgccaaccgg ctccgttctt tgggtggccc ttccgcgcac cttctactcc tcccctagtc 3840  
 aggaagttcc ccccgcccc gcagctcgcg tctgacagga cgtgacaaat ggaagtagca 3900  
 cgtctcacta gtctcgtgca gatggacagc accgctgagc aatggaagcg ggtaggcctt 3960  
 tggggcagcg gccaatagca gctttgctcc ttccgtttct gggctcagag gctgggaagg 4020  
 ggtgggtccg ggggcgggct caggggcggg ctccagggcg gggcgggcgc ccgaaggtec 4080  
 tccggaggcc cggcattctc gcacgcttca aaagcgcacg tctgcgcgcg tgttctctc 4140  
 ttctcatctt ccgggccttt ctgcagtcgg gattaagatg aacgacgagc agatcctgga 4200  
 gatggtgctg cagcaccagc agcgcgcga acaggaagcg gagcgcgagg aggaagttgg 4260  
 ggatgacatg gaagacgacg aagatgatga cggctctcag atgccgacgc cgcttcatgc 4320  
 ctatcagcta ctgtgttacg attctttcga acttcatttc gggggatgcg cttgccacgg 4380  
 gttacctttg catcgtatgg ggttatcggc ttgccacctg gctccttccg atttggccac 4440  
 ttatgtttgg gccaggttgg aggatgactt gaatgtggca ggggtgtact tctgtgctat 4500  
 gtgggcgtca ccggggttta gcgatttctc tccagtattt atgcagcgac cgatcgggaa 4560  
 cgtgtgcggg atgttaattc acgtggacct gcacagcagg ctaccattcc taattgcgg 4620  
 gtgcgccttg ggggagcgcg gtggcagccc ctgtctgtat atgaggaaaa ttgatgttga 4680  
 tttggacacg cagcgcgtac atttttatac agaagattgg ttcagtgagt ttgcgaatct 4740  
 gctgtattac tggcaaatga gcgaatggaa acatttagcg gagcgtatgc aataaagaga 4800

```
cgtgagactg tataaatggt tcacctgtta acggatccca cgtcactatt gtatactcta 4860
tattatactc tatgttatac tctgtaatcc tactcaataa acgtgtcacg cctgtgaaac 4920
cgtactaagt ctcccgtgtc ttcttatcac catcaggtga catcctcgcc caggctgtca 4980
atcatgccgg tatcgattcc agtagcaccg gcccacgct gacaaccac tcttgacgcg 5040
ttagcagcgc ccctcttaac aagccgaccc ccaccagcgt cgcggttact aacactcctc 5100
tccccggggc atccgctact cccgagctta agattaaggg cgaattcggt taaacctgca 5160
ggactagtcc cttagtgag ggtaattct gagcttggcg taatcatggt catagctggt 5220
tcctgtgtga aattgttatc cgctcacaat tccacacaac atacgagccg gaagcataaa 5280
gtgtaaagcc tgggggtgcct aatgagtgag ctaactcaca ttaattgcgt tgcgctcact 5340
gcccgcttc cagtcgggaa acctgtcgtg ccagctgcat taatgaatcg gccaacgcgc 5400
ggggagagggc ggtttgcgta ttgggcgc 5428
```